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THE STUBBY-ROOT NEMATODE,

Paratrichodorus christiei (Allen 1957) Siddiqi 1974

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Fig. 1. Corn showing stubby-root injury. Photo courtesy of H. L. Rhoades. (DPI Photo #702703-B-1)

BACKGROUND: Stubby-root nematodes first received wide attention as plant parasites when J. R. Christie and V. G. Perry determined in 1951 that one species, now classified as Paratrichodorus christiei, was causing damage to Florida crops (1,4,7,11). Observations that the damaged crops had abnormally stunted roots, prompted these investigators to propose the common name "stubby-root" for both the nematode and the root disease (4). Since then, the trichodorid nematodes, in general, have been referred to as stubby-root nematodes. Although there is no precise estimate as to the extent of the crop losses caused by stubby-root nematodes, P. christiei is generally considered to be the most economically important species of stubby-root nematode in the southeastern United States and is known to be responsible for much crop injury and loss (2,7). Stubby-root nematodes are found most abundantly in sandy or sandy loam soils and can cause crop injury over large areas.

HOSTS AND GEOGRAPHIC DISTRIBUTION: Paratrichodorus christiei has been recorded from various parts of the world including Afghanistan, Australia, Belgium, Brazil, New Zealand, Puerto Rico, South Africa, and the United States. Within the United States, it has been reported from Alabama, California, Florida, Georgia, Hawaii, Louisiana, Maryland, Massachusetts, Michigan, New Jersey, North Carolina, Oregon, South Carolina, and Wisconsin (1,4,7, 9,11).

More than a hundred different plants including crops of economic importance are hosts of P. christiei. Common hosts of economic importance are: red beet, sugarbeet, endive, lettuce, cabbage, cauliflower, Brussels sprouts, broccoli, mustard, radish, muskmelon, barley, millet, sweet corn, peanut, soybean, alfalfa, onion, okra, tomato, eggplant, celery, red clover, sweet pepper, boysenberry, grape, peach, persimmon, walnut, wheat, blueberry, cranberry, chayote, lima bean, grapefruit, cowpea, carrot, castor bean, cotton, and azalea (1,4,5,7,9,11,12).

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SYMPTOMS AND PATHOLOGY: Although P. christiei has been known to feed on all areas of roots and root hairs, these nematodes show a preference for the meristematic tissue at the tip of the growing root. The resulting damage to the meristematic tissue causes a cessation of root elongation which results in short stubby roots, and an overall reduction in root development. Roots may have short knob-like branches, or very short laterals, each with a prolific growth of branch rootlets (3,4,6,7,8,10).

The above ground appearances of infected plants are symptomatic of any condition which severely restricts or destroys the root system of a plant, such as retarded growth, wilted foliage, and sensitivity to drought.

SURVEY AND DETECTION:

1) Examine the roots of unthrifty plants for stunted, sparse, or knob-like growth.
2) Collect approximately one pint of soil from the root area of stunted plants and send it to a nematology laboratory.

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